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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JURGEN WIRTH, WOLFGANG PAWLIK and OLIVER GIRNSTEIN

Appeal 2008-3719
Application 10/777,495
Technology Center 1700

Decided: July 31, 2008

Before PETER F. KRATZ, LINDA M. GAUDETTE, and
KAREN M. HASTINGS, *Administrative Patent Judges*.
KRATZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-7. We have jurisdiction pursuant to 35 U.S.C. § 6.

Appellants' claimed invention is directed to a process for producing a polyurethane molding using a shot operation for providing at least one isocyanate component and at least one polyol component to a mixing chamber to form a polyurethane reaction mixture and discharging the polyurethane reaction mixture to a mold. The isocyanate and polyol components are conveyed through circulation lines between the mixing chamber and their respective storage vessels before a changeover from this circulatory mode of operation to the shot operation wherein the mixture is formed and discharged to a mold. According to Appellants' claimed method, adjustment of the volumetric flow rates of the polyol and isocyanate occurs, via a control device, during the changeover between the circulating mode and shot operation modes. Claim 1 is illustrative and reproduced below:

1. A process for producing a polyurethane molding comprising:
   a) conveying in shot operation at least one isocyanate component and at least one polyol component for a predetermined time-interval Δt into a mixing chamber at predetermined volumetric flow-rate $\nu_{s/iso}$ for the isocyanate and $\nu_{s/polyol}$ for the polyol and predetermined pressure $p_{s/iso}$ for the isocyanate and $p_{s/polyol}$ for the polyol,
   b) mixing the isocyanate and polyol in the mixing chamber to form a polyurethane reaction mixture, and
   c) discharging the polyurethane reaction mixture into a mold, and in which
      (1) prior to a), the isocyanate and polyol are conveyed in circuit through circulation lines between the mixing chamber and their respective storage vessels,
      (2) the pressure of the isocyanate and of the polyol are measured by means of pressure sensors and transmitted to a control device,
      (3) the volumetric flow-rates of the isocyanate and polyol are adjusted while being conveyed through the circulation

lines in such a way that the pressure of each of the isocyanate and polyol in the circuit corresponds to the predetermined pressures $p_{s/iso}$ and $p_{s/polyol}$ of the components for shot operation, and

(4) the volumetric flow-rates $\nu_{s/iso}$ and $\nu_{s/polyol}$ of the isocyanate and polyol are adjusted by the control device during change-over from circulatory mode of operation to shot operation by adjustment of drive units of metering elements for the isocyanate and polyol.

The Examiner relies on the following prior art references as evidence in rejecting the appealed claims:

Soechtig	4,944,599	Jul. 31, 1990
Brown	5,240,969	Aug. 31, 1993

Claims 1 and 4-7 stand rejected under 35 U.S.C. § 102 (b) as being anticipated by Soechtig. Claims 2 and 3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Soechtig in view of Brown.

We affirm the rejections as set forth in the Answer for the reasons set forth therein and as further discussed below.

Section 102(b) Rejection over Soechtig

Appellants argue the rejected claims together as a group. Accordingly, we select the sole independent claim 1 as the representative claim on which we decide this appeal as to this rejection.

"To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently." *In re Schreiber,* 128 F.3d 1473, 1477 (Fed. Cir. 1997); *accord Glaxo Inc. v. Novopharm Ltd.,* 52 F.3d 1043, 1047 (Fed. Cir. 1995). However, anticipation by a prior art reference does not require that the reference recognize either the inventive concept of the claimed subject matter or the

inherent properties that may be possessed by the prior art reference. *See Verdegaal Bros., Inc. v. Union Oil Co. of California*, 814 F.2d 628, 633 (Fed. Cir.), *cert. denied*, 484 U.S. 827 (1987).

Anticipation under this section is a factual determination. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 390 (Fed. Cir. 1991) (citing *In re Bond*, 910 F.2d 831, 833 (Fed. Cir. 1990)).

The Examiner has found that Soechtig discloses a process that is embraced by the representative claim 1 process steps, including the recited conveying, mixing, and discharging steps (a-c) associated with the claimed molding (shot operation phase(s) of the claimed process), and the conveying, measuring, adjusting, and change-over adjusting steps (1-4), associated with the circulation and change-over phases of the claimed process (Ans. 2 and 3).

Appellants do not specifically argue with the Examiner's anticipation finding by asserting that Soechtig fails to disclose, explicitly or implicitly, a polyurethane formation method that includes steps corresponding to steps (a), (b), (c), (1), and (2), as recited in representative claim 1. Rather, Appellants seemingly argue a distinction based on steps (3) and (4) of claim 1 with primary emphasis on step (4), in asserting error in the Examiner's anticipation position (App. Br. 4).

In particular, Appellants argue that the step (4) adjustment of the polyol and isocyanate volumetric flow during change-over is not taught by Soechtig (App. Br. 4; Reply Br. 2). While acknowledging that Soechtig discloses the inclusion of an adjustable pump in the circulation loop of drawing Figure 5, Appellants maintain that "Soechtig

does not teach adjustment of flow rate [during change-over] to maintain pressure during shot operation. Rather, Soechtig teaches monitoring of flow rate and pressure to actuate the motor controlling nozzle position" (App. Br. 6).

Appellants further assert that:

> It is the control of the nozzle position by which the appropriate pressure is maintained in the Soechtig method. (See column 1, lines 54- 58 of Soechtig.)
>
> Soechtig does **not** teach or suggest that adjustment of the flow rate of the reaction components could or should be used to maintain a constant pressure.

App. Br. 5.

In this regard, Appellants refer to Soechtig at column 1, line 65 through column 2, line 4 wherein Soechtig states:

> The interaction between volume and pressure of each component further enables changing the component mixing ratio by affecting the pressure of only a single component or by modification of the component pressure of each component independent of the component pressure of the other components. Changing the component mixing ratio will affect the characteristics of the product produced.

(Soechtig, col. 1, l. 65-col. 2, l. 6; App. Br. 5).

Also, Appellants urge that Soechtig "at column 7, lines 26-30 do not support the rejection … because this cited portion of the reference does not teach or suggest that adjustment of the flow volume of reactants could or should be used to maintain a constant pressure during the circulation and shot modes of operation" (App. Br. 5).

Thus, the principal issue raised before us by the arguments presented in the Brief and the Reply Brief is: Have Appellants pointed out reversible error in the Examiner's anticipation rejection by their assertions that Soechtig does not disclose an adjustment step during changeover from circulation to shot modes in their method that corresponds to the argued claim 1, step (4) requirements? We answer this question in the negative and we affirm the Examiner's anticipation rejection.

In this regard and as further acknowledged by Appellants (App. Br. 5), Soechtig discloses that the setting of the pump (9), which is in the recirculation loop, is adjusted based on monitoring a flow measurement of a flow meter (28) and using a linear potentiometer (26) via a controller, wherein the pump setting is adjusted by using a servo valve (25) and a setting piston (24) (Soechtig, col. 7, ll. 5-15).

Soechtig explains that a circulation loop is employed as part of their high pressure impingement mixing system, which circulation loop includes a flow volume meter in addition to a pressure sensor as part of a closed loop feedback control (Abstract ll. 1-5). Soechtig explains that "[c]onstant pressure and flow volume is achieved by continuous closed feedback loop monitoring of the pressure and flow volume to effect a change in an adjustable pump setting and servo displaceable nozzle needle" (Abstract ll. 5-9).

Appellants have not pointed out to us any compelling disclosure of Soechtig that describes stopping the control and monitoring during the circulation or changeover operating times that occur prior to a subsequent shot operation in Soechteg. Indeed, Soechtig discloses that a control switch regulates the switch over from a circulation to component mixing phases

(shot phases) of operation in their system as was employed in the prior art (col. 1, ll. 30-40, col. 4, ll. 38-61, Fig. 1).

Soechtig's disclosed modification of that prior art process involves furnishing feed back control monitoring and adjustment control equipment that can operate continuously and includes adjustable pumps that can alter component flow rates or volume (col. 1, l. 54- col. 2, l. 18). This disclosure reasonably supports the Examiner's anticipation finding, which appears to be reasonably founded on a determination of an explicit or implicit description in Soechtig of the continuous monitoring and adjusting of reactant flow and pressure parameters during all phases of operation, including the change over phase that claim 1 broadly requires. For example, Soechtig's claim 4, which claim ultimately depends from claim 1, highlights some of the method steps described by Soechtig, including a pump adjustment step for controlling volume flow.

This finding is also bolstered by Soechtig's disclosure that the adjustable pumps for the reactant component flows allow for component flow rate or volume changes and that the volume and pressure of the components are among the parameters that can be controlled using a control system with a control that operates by looking forward to make nozzle and/or pump adjustments (col. 2, ll. 52-65 and col. 5, l. 40 – col. 7, l. 30). We further note that Appellants' representative claim 1 process is not limited to a process wherein a constant pressure is maintained during circulation and shot modes of operation via reactant component flow rate adjustments, much less solely through such adjustments (App. Br. 5-6). As such, these arguments are not persuasive of reversible error in the Examiner's rejection. In any event, Soechtig reasonably describes constant pressure operation as an option in the Abstract as pointed out above.

Moreover, we observe that representative claim 1 does not require any particular amount of volumetric flow rate adjustment and Appellants seemingly acknowledge that some volumetric flow rate adjustment occurs as a result of the changeover from circulation to shot mode of operation as a result of the actuation of the switchover units in prior state of the art operations, such as control piston (2) and associated components as disclosed by Soechtig. See, for example, Appellants' drawing Fig. 3 and the accompanying Specification text, which text and drawing figure describe prior state of the art operation volume changes during changeover from circulation to shot operation. This acknowledgment would seemingly undercut Appellants' argument to the effect that Soechtig's process would not be accompanied by at least some volumetric flow adjustment, as broadly encompassed by step (4) of representative claim 1.

In addition, Soechtig makes it clear that "any change in pressure will lead to a difference in flow volume" (col. 5, ll. 39-40), which disclosure reasonably suggests that Soechtig's movement of the changeover piston and the nozzle needles would also adjust volumetric flow rates via their controlled operation.

On this record, we are not persuaded of reversible error in the Examiner's anticipation rejection based on the arguments furnished in the Briefs. Accordingly, we affirm the Examiner's anticipation rejection of claims 1 and 5-7.

Section 103(a) Rejection over Soechtig and Brown

Concerning dependent claims 2 and 3, Appellants do not argue against the Examiner's determination that the inclusion of additional reactive components/additives (claim 2) and dye (claim 3) together with the polyol

and isocyanate components of Soechtig would have been obvious to one of ordinary skill in the art given the combined disclosures of Soechtig and Brown. Rather, Appellants contend the Examiner's obviousness rejection of claims 2 and 3 is in error because Brown does not teach or suggest maintaining a constant pressure by control of volumetric flow rate as required in these claims by virtue of their dependency on claim 1 (App. Br. 7).

This argument is not persuasive for reasons discussed above with respect to our discussion of the propriety of the Examiner's anticipation rejection of claim 1 over Soechtig and for reasons stated by the Examiner in the Answer. We note that claim 1 does not require a constant pressure but rather that pressures corresponding to predetermined pressure are maintained via volumetric flow rate adjustment (claim 1, step 3). In any event, Soechtig clearly provides for such constant pressure operation as one described mode of operation (Abstract; col. 5, ll. 35- 53; col. 8, ll. 55-57).

On this record, Appellants have not persuaded us of reversible error in the Examiner's obviousness rejection.

It follows that we shall sustain the Examiner's obviousness rejection of claims 2 and 3.

CONCLUSION

The decision of the Examiner to reject claims 1 and 4-7 under 35 U.S.C. § 102(b) as being anticipated by Soechtig and to reject claims 2 and 3 under 35 U.S.C. § 103(a) as being unpatentable over Soechtig in view of Brown is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv).

AFFIRMED

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